What is claimed is:

1. A transmission system, comprising:

a sending device for converting higher-layer protocol data to continuous blocks of a fixed length, inserting idle blocks between said blocks to match the sending rate to the transmission rate of the transmission line, and transmitting;

at least one stage of relay devices for receiving said blocks and said idle blocks, discarding these idle blocks to extract only said valid blocks, and then inserting idle blocks between said valid blocks to match the sending rate to the transmission rate of the transmission line on the transmission side and transmitting to a prescribed transfer destination; and

a receiving device for receiving said blocks and said idle blocks from said relay device of the final stage, discarding these idle blocks to extract only said valid blocks, and reconstructing said higher-layer protocol data from said valid blocks.

2. A transmission system according to claim 1, wherein:

said sending device generates 18-byte blocks by converting said higher-layer protocol data to a length of 133 bits in accordance with prescribed rules and then adding supplementary information; and

said receiving device, after extracting only said blocks that are valid, removes said supplementary information from said blocks to restore the length of 133 bits, and finally, reconstructs said higher-layer protocol data in accordance with prescribed rules.

3. A transmission system according to claim 2, wherein said sending device, said relay device, and said receiving device transmit signals by

SONET protocol.

4. A transmission system according to claim 2, wherein

when said higher-layer protocol data takes the form of frames, said sending device converts said frames to a length of 133 bits by adding null data to the tails of said frames to make the frame length an integer multiple of 16 octets if the length of said frames is not an integer multiple of 16 octets, dividing said higher-layer protocol data into units of 16 octets, and adding to each unit of 16 octets five bits of type information indicating the position of that unit within said higher-layer protocol data; and

said receiving device reconstructs said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device.

5. A transmission system according to claim 4, wherein said higher-layer protocol are Ethernet.

6. A transmission system according to claim 2, wherein, when said higher-layer protocol data takes the form of 8B/10B code:

said sending device converts said 8B/10B code to said blocks having a length of 133 bits by, for data code, fetching data portions of 8 bits, and for control code, representing control information by 4 bits and adding 4 bits of information indicating the position of the next control code, resulting in 8 bits, and finally, adding five bits of information indicating the position of the next control code to the header of every 16 codes; and

said receiving device reconstructs said higher-layer protocol data by

performing a conversion that is the reverse of the conversion in said sending device.

7. A sending device for transmitting higher-layer protocol data, comprising:

a core block generator for converting said higher-layer protocol data to core blocks of a fixed length in accordance with prescribed rules;

a header addition unit for generating blocks having a length of 18 bytes by adding supplementary information to said core blocks; and

a mapping unit for matching the sending rate to the transmission rate of a transmission path by inserting idle blocks between said blocks and transmitting.

8. A relay device for transmitting blocks of a fixed length, comprising:

a demapping unit for receiving said blocks having a length of 18 bytes and idle blocks that have been inserted between these blocks;

an idle elimination unit for discarding said idle blocks and extracting only said blocks that are valid; and

a mapping unit for matching the sending rate to the transmission rate of a transmission path by inserting idle blocks between said blocks that are valid and transmitting to a prescribed transfer destination.

9. A receiving device for receiving blocks of a fixed length, comprising:

a demapping unit for receiving said blocks having a length of 18 bytes

and idle blocks that have been inserted between these blocks;

an idle elimination unit for discarding said idle blocks and extracting only said blocks that are valid;

a header elimination unit for eliminating supplementary information that has been added to said blocks that are valid to produce core blocks; and

a core block termination unit for reconstructing said higher-layer protocol data from said core blocks.

10. A data transfer method for transmitting higher-layer protocol data in a transmission system that includes a sending device, at least one stage of relay devices, and a receiving device; said data transfer method comprising:

in said sending device:

a first step of converting higher-layer protocol data to continuous blocks having a fixed length; and

a second step of matching sending rate to the transmission rate of the transmission path by inserting idle blocks between said blocks and transmitting;

in said relay device:

a third step of receiving said blocks and said idle blocks from said sending device;

a fourth step of discarding the idle blocks and extracting only said blocks that are valid; and

a fifth step of matching the sending rate to the transmission rate in the transmission path by inserting idle blocks between said blocks that are valid and transmitting to a prescribed transfer destination;

and in said receiving device:

a sixth step of receiving said blocks and said idle blocks from the final stage relay device;

a seventh step of discarding said idle blocks and extracting only said blocks that are valid; and

an eighth step of reconstructing said higher-layer protocol data from said blocks that are valid.

11. A data transfer method according to claim 10, wherein:

in said first step, 18-byte blocks are generated by first converting said higher-layer protocol data to a length of 133 bits in accordance with prescribed rules and then adding supplementary information; and

in said eighth step, said supplementary information is removed from said blocks to restore the length of 133 bits, and further, said higher-layer protocol data are reconstructed in accordance with prescribed rules.

12. A data transfer method for transmitting higher-layer protocol data by means of a transmission system, comprising:

a first step of converting higher-layer protocol data to continuous blocks of a fixed length;

a second step of transferring within said transmission system while regulating transmission rate by inserting or deleting idle blocks between said blocks; and

a third step of discarding said idle blocks and reconstructing said higher-layer protocol data from said blocks that are valid.

13. A data transfer method according to claim 12, wherein:

in said first step, 18-byte blocks are generated by first converting said higher-layer protocol data to a length of 133 bits in accordance with prescribed rules and then adding supplementary information; and

in said third step, said supplementary information is removed from said blocks to restore the length of 133 bits, and further, said higher-layer protocol data are reconstructed in accordance with prescribed rules.